TRANSMITTAL OF APPEAL BRIEF

Docket No.
GROTH 3.3-023

In re Application of: Göran Lundberg, Olof Metlander, and Kurt Schedin

Application No.	Filing Date	Examiner	Group Art Unit
09/830,864	August 23, 2001	S. C. Yao	1733

Invention: METHOD AND ARRANGEMENT FOR THE CONTINUOUS PRODUCTION OF LIGNOCELLULOSE-CONTAINING BOARDS

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Samantha Kameros

Dated: June 16, 2005

Samantha M. Kameros
Attorney Reg. No. : 50,631
LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK, LLP
600 South Avenue West
Westfield, New Jersey 07090
(908) 654-5000

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Docket No.: GROTH 3.3-023
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Lundberg et al.

Application No.: 09/830,864 Group Art Unit: 1733

Filed: August 23, 2001 Examiner: S. C. Yao

For: METHOD AND ARRANGEMENT FOR THE CONTINUOUS PRODUCTION OF LIGNOCELLULOSE-CONTAINING BOARDS

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicants hereby file this brief on Appeal from the final rejection of claims 7, 9, 10 and 12, mailed July 15, 2004, and in response to the Advisory Action mailed December 2, 2004.

REAL PARTY(IES) IN INTEREST

The real party in interest is Valmet Fibertech AB of Sundsvall, Sweden, the assignee of the above-referenced application.

RELATED APPEALS AND INTERFERENCES

To the best of Applicants' current knowledge, there are no related appeals or interferences pending before the U. S. Patent and Trademark Office regarding this United States patent application.

STATUS OF CLAIMS

Claims 1-6, 8, 11, 13 and 14 have been canceled from the present application. Claims 7, 9, 10 and 12 are pending in the present application. Claims 7, 9, 10 and 12 stand rejected and are the subject of this appeal. Applicants attach a clean copy of the claims hereto as Appendix A.

STATUS OF AMENDMENTS

After receiving the Final Office Action mailed July 15, 2004, Applicants filed an Amendment After Final Rejection under 37 C.F.R. § 1.116. In the Advisory Action mailed December 2, 2004, the Examiner indicated that the amendment was entered.

SUMMARY OF CLAIMED SUBJECT MATTER

The invention as set forth in claims 7, 9 and 10 is directed to a method for producing lignocellulosic boards from a mat of lignocellusic material. The mat of lignocellulosic material is compressed in a steam injection press to inject steam into the lignocellulosic boards and generate steam and gaseous emissions therein. These gaseous emissions include various volatile organic materials (VOC) and other noxious

components, that can be quite problematic in the work environment. In any event, the process does include capturing the steam and gaseous emissions, and supplying hot air independent of the steam to the steam injection press and the mat, thereby preventing condensation of the steam, gaseous emissions, and any leakage of air from the surroundings. The steam and gaseous emissions are transported to a combustion plant and the lignocellulosic boards are passed to an after-conditioning unit which generates a stream of suction air. The stream of suction air is heated to a temperature greater than 100°C, and the stream of heated suction air is used for supplying the hot air to the steam injection press.

The invention as set forth in claim 12 is directed to apparatus for producing lignocellulosic boards from a mat of lignocellulosic material comprising a steam injection press for compressing the mat to form the lignocellulosic boards and produce steam and gaseous emissions therefrom, a suction member for capturing the steam and gaseous emissions and a hot air unit for supplying hot air to the steam injection press whereby condensation of the steam, the gaseous emissions and any leakage air from the surroundings is prevented. The apparatus includes transport means for transporting said steam and gaseous emissions to a combustion plant and an after-conditioning unit for subsequently conditioning the lignocellulosic boards and generating a stream of suction air, a heater for heating the stream of suction air, and supply means for supplying the heated stream of suction air to the hot air unit.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 7, 10 and 12 are unpatentable under 35 U.S.C. 103(a) as being obvious over Tilby (U.S. Patent No. 5,284,546) in view of Tisch (U.S. Patent No. 5,433,905) or Eriksson et al. (U.S. Patent No. 5,932,156), Fischer et al. (U.S. Patent No. 5,063,010)

and Walsh (U.S. Patent No. 5,344,484) and further in view of alleged Admitted Prior Art, Puumalainen (U.S. Patent No. 5,815,943), Holik (U.S. Patent No. 5,387,782), Lehtinen (U.S. Patent No. 4,932,139) and Westelaken (U.S. Patent No. 4,424,634).

B. Whether claim 9 is unpatentable under 35 U.S.C. 103(a) as being obvious over Tilby (U.S. Patent No. 5,284,546) in view of Tisch (U.S. Patent No. 5,433,905) or Eriksson et al. (U.S. Patent No. 5,932,156), Fischer et al. (U.S. Patent No. 5,063,010) and Walsh (U.S. Patent No. 5,344,484) and further in view of the Admitted Prior Art wherein Applicants state that a well known problem with prior art manufacturing technology is that gases are generated in the press during the compression process.

ARGUMENT

The Examiner has rejected claims 7, 10 and 12 under 35 U.S.C. 103(a) as being unpatentable over Tilby (U.S. Patent No. 5,284,546) in view of Tisch (U.S. Patent No. 5,433,905) or Eriksson et al. (U.S. Patent No. 5,932,156), Fischer et al. (U.S. Patent No. 5,063,010) and Walsh (U.S. Patent No. 5,344,484). To establish a *prima facie* case of obviousness under § 103, the references relied upon for rejection must suggest the entirety of the claimed invention, and hence, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. § 2143.

Tilby, *Tisch* or *Eriksson*, *Fischer* and *Walsh* in combination do not make out a *prima facie* case of obviousness with respect to claims 7 and 10 because these references, even if taken in combination, do not teach or suggest at least the recitations that the captured steam and gaseous emissions are transported to a combustion plant, and that the lignocellulosic boards produced are passed to an after-conditioning unit which

generates a stream of suction air which is heated to a temperature greater than 100°C and used for supplying the hot air to the steam injection press. Accordingly, these references do not teach the invention as a whole. Likewise, claim 12 requires that the claimed apparatus include means for transporting the captured steam and gaseous emissions to a combustion plant and include an after conditioning unit for subsequently conditioning the lignocellulosic boards produced and generating a stream of suction air, a heater for heating the stream of suction air, and supply means for supplying the heated stream of suction air to the hot air unit. Furthermore, the recitations that the captured steam and gaseous emissions are transported to a combustion plant, and that the lignocellulosic boards produced are passed to an after-conditioning unit which generates a stream of suction air which is heated to a temperature greater than 100°C and used for supplying the hot air to the steam injection press are not taught by *Puumalainen, Holik, Lehtinen* or *Westelaken*. teach re-using spent (i.e. heated) coolant somewhere at another point in the process taught by each of these references.

The present invention overcomes the well-known problem of the prior art technology that gases are generated in a press during the compression process, which takes place at high temperatures. Long time exposure to these gases, which consist of water vapor, or steam, different volatile substances dissolved from wood and glue, referred to as Volatile Organic Compounds (VOC) and gaseous phenol from wood, glue, etc., results in irritation, and are harmful to personal health when present in sufficiently high concentrations. Containment and/or purification of press gases has necessitated the installation of complicated and expensive equipment in connection with the majority of plants in which lignocellulosic sheets and boards are produced. Thus, the invention of claims 7, 9, 10 and 12

provides a novel method and apparatus for making lignocellulosic boards that results in heat economy and more efficient prevention of harmful gaseous emissions.

The Examiner alleges that *Tilby* discloses a process of making a lignocellulosic board that includes the steps of feeding a mat comprising binder impregnated fibers into a belt press, compressing the mat in the belt press, blowing a stream of hot air into the mat to cure the binder, and moving and further hearing the hot air stream in a conduit to a receiving end opening of the conduit using supplemental blowers and heaters. *Tilby* is directed to a method and apparatus for making structural panel from the rinds of sugarcane and similar woody grasses. The method includes providing a collection of straight rind fiber bundles strands, coating them with binder, depositing coated strands in a *loose pile* with the strands randomly oriented in substantially parallel planes, pressing the pile to a final thickness, and curing to interconnect each strand with others. *Tilby* does not even disclose a method for producing lignocellulosic boards from a *mat* of lignocellulosic material. Moreover, *Tilby* does not teach several other elements of claims 7, 10 and 12. The Examiner, in fact, admits that *Tilby* does not teach injecting steam to preheat a mat in a belt press; that the captured steam and gaseous emissions are transported to a combustion plant; and that the lignocellulosic boards produced are passed to an after-conditioning unit which generates a stream of suction air which is heated to a temperature greater than 100°C and used for supplying the hot air to the steam injection press.

The Examiner alleges that it would have been obvious to inject steam to pre-heat a mat in a belt press taught by *Tilby* because it is a common practice in the art of making fiber boards to steam pre-heat a mat in a belt press before the mat is press-cured, as exemplified in the teachings of *Tisch* or

Eriksson. *Tisch* discloses a process for the production of particulate board from a matrix of flakes or particles mixed with a cementitious material including the steps of continuously feeding the matrix into a press, applying at least one of steam and gas or gases to the matrix to cure the matrix to form the particulate board, and removing steam and gas or gases therefrom by vacuum assistance.

Eriksson discloses a method for the continuous production of compressed board from lignocellulosic fibrous materials including the steps of drying, gluing and forming lignocellulosic material into a mat, and compressing the mat in the presence of steam. The steam is applied through a compression roller. *Fischer* is directed to a method for making fiberboard comprising the steps of forming a mixture of a binder and particles having a relatively low moisture content, depositing the mixture as a mat on a movable substrate, and preheating the mat with steam to raise its temperature and to increase its moisture content to a relatively high moisture content. *Walsh* relates to a method of manufacturing an isocyanate bonded wood composite.

The Examiner has not pointed to any teaching, suggestion or motivation in any of the references to combine the teachings of *Tilby*, *Tisch*, *Erikkson* and *Walsh*, which are all directed to different methods of making particle boards from different starting materials. In each instance of combining references, the Examiner merely states that the references can be combined because they relate to the general industry of making particleboard, ignoring the fact that there are several distinct processes for making particleboard which use complicated and varied equipment.

Indeed, in contrast to the process of *Eriksson*, wherein a compression roller is used to compress the mat in the presence of steam, in the plant used by the present invention, steam is

delivered and injected into the mat through wires. Because this process takes place between two gas-permeable wires, the steam and the gases departing with the steam are able to leave the board across its entire width, and are captured before being able to escape into the atmosphere. Clearly, this is distinct from the process *Erikkson*, as well as *Tilby*, *Tisch* and *Walsh*, which do not even teach that a mat can be compressed in the presence of steam. Furthermore, none of these references provide any disclosure with regard to capturing the gaseous emissions.

Likewise, the process disclosed in *Fischer*, which is the only reference that teaches preheating a mat with steam, does not include adding hot air to the mat as a separate step so as to prevent condensation, as recited in independent claim 7 of the present invention. Additionally, *Fischer* does not disclose that the hot air comes from a hot air unit, as distinguished from the steam injection press, as recited in independent claim 12 of the present application. Indeed, *Fischer* only discloses the injection of whatever air may be inherently included with the steam, *i.e.*, a steam/air mix. Moreover, *Fischer* uses condensate to form part of the mixture that forms the board. The present invention is distinguishable in that it substantially avoids condensate forming in the first place, by the discrete step of adding hot air.

Moreover, even if a person of ordinary skill in the art was motivated to combine the references, the claimed invention would not have been produced. Several claim elements are not taught by *any* of the references cited. In addition to the above, none of these references cited by the Examiner disclose that the steam and gaseous emissions are transported to a combustion plant. Instead, the Examiner asserts that it is common practice in the art to incinerate polluting gases during a manufacturing process. First, the Examiner has not pointed to any teaching or

suggestion to combine a method of making lignocellulosic board and transporting the steam and gaseous emissions produced by such a method. Second, even if incinerating polluting gases is common practice during a manufacturing process, the claimed invention is not rendered obvious because there is no teaching, suggestion or motivation in any of the references to incinerate polluting gases in connection with a method of making lignocellulosic boards.

Additionally, neither *Tilby*, *Tisch*, *Fischer*, *Erikkson* or *Walsh* teach supplying hot air *independent* of the steam to the steam injection press and to the mat, as required by the claims, nor do any of the references cited disclose a hot air unit for supplying the hot air to prevent condensation of steam and/or emissions.

Furthermore, none of the references cited, including *Puumalainen, Holik, Lehtinen* and *Westelaken*, as asserted by the Examiner, teach or suggest that the hot air supplied to the injection press is supplied in the form of suction air, and further, that the stream of suction air is generated by an after-conditioning unit. The Examiner asserts that *Puumalainen, Holik, Lehtinen* and *Westelaken* teach re-using spent (i.e. heated) coolant somewhere at another point in the process taught by each of these references, and that the collected conditioning air via vacuum/suction means is taken to be a suction air, thus, application of a vacuum/suction means to collect conditioning air in a modified process of *Tilby* would have been obvious. First, there is no teaching, suggestion or motivation in any of the references cited to combine the teachings of *Puumalainen, Holik, Lehtinen* or *Westelaken* with the process of *Tilby*, let alone a modified process of *Tilby*. Second, even if these references were combined, the claimed invention would not have been produced. Claims 7 and 12 require that the stream of heated suction air is used for supplying of the hot air to the

steam injection press, but the Examiner only addresses using suction means to collect gases in a conditioning zone. Thus, there is no combination of the cited references that would render the present invention obvious.

In view of the above, Applicant respectfully requests that this rejection be reversed.

Claim 9 stands rejected under 35 U.S.C. 103(a) as being obvious over *Tilby* in view of *Tisch* or *Eriksson*, *Fischer* and *Walsh* and further in view of the alleged Admitted Prior Art wherein Applicants state that a well known problem with prior art manufacturing technology is that gases are generated in the press during the compression process.

Claim 9 depends from claim 7, therefore, it includes all of the elements of claim 7. Since the alleged Admitted Prior art does not teach the elements missing above, claim 9 is not rendered obvious by the references cited by the Examiner, for at least the reasons discussed above.

Furthermore, Applicants respectfully disagree with the Examiner's characterization of the alleged "Admitted Prior Art." Applicants point out that a well known problem with prior art manufacturing technology is that gases are generated in the press during the compression process. These prior art methods require installation of complicated and expensive equipment, as stated by Applicants. Applicants have provided a method and apparatus to solve the problems of the prior art without the need to install expensive equipment which is disclosed by Applicants in the section of the specification entitled Summary Of The Invention, and claimed by the present application. There is nothing in the section of the specification entitled Background Of The Invention that provides a teaching, suggestion or motivation, based on the prior art manufacturing technology, to transport the steam and gaseous emissions produced by a method of producing lignocellulosic boards to a combustion plant.

Therefore, there is no combination of the cited references that would render the invention of claim 9 obvious. Accordingly, Applicants respectfully request that this rejection be reversed.

CONCLUSION

For the reasons set forth above, Applicant respectfully submits that this honorable Board should reverse all rejections on appeal, and issue a Notice of Allowance.

Dated: June 16, 2005

Respectfully submitted,

By Samantha Kameros

Samantha M. Kameros
Registration No.: 50,631
LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK, LLP
600 South Avenue West
Westfield, New Jersey 07090
(908) 654-5000
Attorney for Applicant

APPENDIX A - CLAIMS

A copy of the claims on appeal is set forth below.

7. A method for producing lignocellulosic boards from a mat of lignocellusic material comprising compressing said mat in a steam injection press to inject steam into said lignocellulosic boards and generate steam and gaseous emissions therein, capturing said steam and gaseous emissions, and supplying hot air independent of said steam to said steam injection press and to said mat, thereby preventing condensation of said steam, said gaseous emissions, and any leakage of air from the surroundings, wherein said steam and gaseous emissions are transported to a combustion plant and said lignocellulosic boards are passed to an after-conditioning unit which generates a stream of suction air, said stream of suction air is heated to a temperature greater than 100°C, and said stream of heated suction air is used for said supplying of said hot air to said steam injection press.

9. The method of claim 7 wherein said combustion plant has a predetermined required amount of combustion air, and including supplying said hot air and any of said leakage air to said steam injection press in an amount which is not greater than said predetermined required amount.

10. The method of claim 7 wherein said supplying of said hot air to said steam injection press includes supplying said hot air to a curing zone in said steam injection press at a temperature of greater than 100°C.

12. Apparatus for producing lignocellulosic boards from a mat of lignocellulosic material comprising a steam injection press for injecting steam into said mat and compressing said mat to form said lignocellulosic boards and generating steam and gaseous emissions therefrom, a suction member for capturing said steam and gaseous emissions, and a hot air unit for supplying

hot air to said steam injection press and to said mat, thereby preventing condensation of said steam, said gaseous emissions, and any leakage air from the surroundings, wherein said apparatus includes transport means for transporting said steam and gaseous emissions to a combustion plant and wherein said apparatus includes an after-conditioning unit for subsequently conditioning said lignocellulosic boards and generating a stream of suction air, a heater for heating said stream of suction air, and supply means for supplying said heated stream of suction air to said hot air unit.

APPENDIX B - EVIDENCE

Appellant has not relied upon any evidence in this appeal.

APPENDIX C - RELATED PROCEEDINGS

There are no related proceedings pending before the U. S. Patent and Trademark Office regarding this United States patent application.

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